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AN OVERVIEW OF THE INFLUENCE OF TEACHERS` SUBJECT MATTER KNOWLEDGE ON STUDENTS' ACADEMIC ACHIEVEMENT

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Abstract

This study intended to discover the teachers' subject-matter knowledge and its influence on students' academic achievement. The teachers` subject matter knowledge is a matter on which the teachers are recruited to continue the teaching process. Teachers` grip and command of the subject matter knowledge can bring a positive change in the student's academic outcomes. Henceforth, this research study was conducted to have an overview of the influence of teachers` subject matter knowledge on students' academic achievement in public secondary schools. The explanatory type with quantitative research was designed to go through the study. The population consisted of 922 teachers from which the sample was selected with a random sampling method consisting of 93 Teachers from all the public secondary schools of Taluka Qasimabad Hyderabad. The Likert Scale Five Point Questionnaire was used as an instrument for data collection. The data was analyzed using descriptive and inferential statistics with the help of SPSS 26 Version. It was revealed that subject matter knowledge is an essential ingredient to impart the basic required knowledge. It is only a source that can enhance students` academic achievement. The results showed that a teacher's subject-matter expertise had a huge impact on students` academic achievement. The study may help guide the School Education and Literacy Department on how to enhance and polish teachers` skills through training in teachers` training programs.

Keywords: Teacher, Preparedness, Academic, Achievement, Knowledge.

Introduction

Subject-matter expertise is expertise in the subject that a teacher is instructing. It frequently comprises knowledge of both what is known outside of the field as well as how the discipline develops. The information on foundational concepts, forensic techniques, and resources, as well as the composition and cascading ramifications, is crucial for preparing the class for aggregate parts and lectures. Teachers need to be well-versed in the subject matter being taught in the classroom to strengthen cross-curriculum connections (De Nobile, 2007). In analyzing the effectiveness of teaching, Darling Hammond (2006) highlighted three factors: (a) the ability of instructors to convey content; (b) teaching subject information; and (c) teachers' teaching diaries. Because teachers may encounter ambiguous situations such as pupils asking several wrong questions that lead to confusing conclusions, adequate learning is a key element in educational domains (Shulman et al. 2021). The subject matter not only comprises specific material within the teacher's areas of activity, but it also encompasses the learners' presumption and certainty and their usage as a tool to assist students in achieving complexity and exploiting real-world inconsistencies. Teachers must explain how one definition relates to another, dispel students' misconceptions, and prepare them to form useful cognitive atlases by teaching rigorous and subordinate material by national and international standards. C. W. Anderson, 1988. Teachers must be able to see the connections between and practical applicability of concepts from several disciplines. Teachers with a basic understanding of discipline are the cornerstone of pedagogical material knowledge that makes ideas or concepts meaningful for learners. (Shulman et al. 2021). Meeting the objectives of a lecture heavily depends on the instructor's subject matter competence, which might provide the teacher with inaccurate information if he lacks a clear grasp. The students are going to be challenging. Rice (2003) emphasized the need for instructors to have in-depth topic knowledge since it is impossible for them to study a subject poorly, which results in a lack of student engagement, respect for the teacher, and teacher confidence.

Statement of the study

The researchers discovered that professors who had significant subject-matter expertise had an impact on their pupils' exam scores, which were higher than expected. Teachers are encouraged to learn a certain subject through a variety of methods (Ball, D. L. 2010). Teachers who are knowledgeable in the subjects they teach well know the best methods of instruction to use in supporting students to understand in-depth of the subject matter. Teachers are a force for change in the field of education. Hence the researcher intended to have an overview of the influence of teachers` subject matter knowledge on students' academic achievement.

Objective of the study

1. To examine the teachers` subject matter knowledge
2. To know the influence of teachers` subject matter knowledge on students' academic achievement.

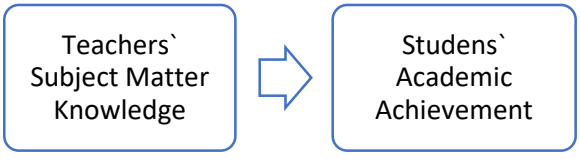
Research Question

1. What is the teachers` subject matter knowledge?

Hypothesis of the study

H:1 There is no significant influence of teachers` subject matter knowledge on students' academic achievement

Conceptual Framework



Significance of the study

This study can contribute to different aspects of education such as:

1. This study will be helpful for teachers to understand the subject matter knowledge.
2. This study will be helpful for the heads of the institutions to grasp the gaps in teachers` subject matter knowledge.
3. This study will also be helpful for the policymakers to plan for teachers` continuous professional development, especially in subject matter knowledge.
4. This study can lead the teachers` training institutions to cope with the teacher's subject matter knowledge during teachers` training.
5. This study can also better contribute to finding out the gaps in teachers` subject matter knowledge.

Literature Review

Even a few teachers in Pakistan can describe the general structure of a subject book and are thus classified in this item analysis as demonstrated in this study. Most teachers in Pakistan are unaware that there is a document of the national curriculum for which a book is designed to achieve the objectives. Of the whole sampled population of teachers, a sizable portion are Developing teachers. These educators are familiar with the subject's area, fundamental ideas, theories, and organizational framework (Shakir & Lodhi 2016). When it comes to the process of learning the topic, over half of "Emerging Teachers" are developing teachers, which is extremely concerning given that more than one-fourth of all instructors are developing teachers. This is because there are extremely few skilled and experienced teachers who are focusing on their Continuous professional development (Weinberg, S. S. 1987). There are a fair number of teachers who are aware of the subject's evolving nature; in this case, one-third of all teachers are "Emerging" teachers, and it is not encouraging that another third of all teachers do not even understand the subject's evolving nature. Any topic in the twenty-first century must stay current with new ideas, but in this study, evaluation results show that only a small percentage of teachers agree that this is required, and the rest either downplay its significance or, maybe, acknowledge it but lack the time. Whatever the cause, instructors need to be modernized in this perspective respectively, regarding their comprehension of the discipline's instruction (Ball, D. L. 2010). Thus, the bulk of the instructors may be classified as "Developing" or "Emerging" teachers. Because none of the observed instructors were topic experts, they were initially tasked with teaching other subjects, but owing to a teacher shortage or lack of availability, they were given the extra responsibility of teaching the subject. A very small percentage of instructors are classified as Proficient and Demonstrated teachers since they were unable to comprehend the most recent developments at the national and worldwide levels as well as the new emerging thoughts, ideas, and implications of studies. Only a small percentage of instructors were "Accomplished" teachers in this regard, with the bulk of teachers falling into the "Developing" and "Emerging" teacher categories. In-depth topic knowledge is an essential component of subject matter. This must change since it is the foundation for all other aspects of subject matter expertise (Shulman, L. 2021). The goal of the study was to determine how the subject matter expertise of instructors affected students' academic performance in public secondary schools. It was discovered via various studies that professors legally convey and teach learning tactics that aid pupils in succeeding and developing positive thought by incorporating lesson preparation. The most important characteristic of a skilled teacher is often their knowledge of the topic they teach, which has lately been taken into consideration. The results of this study are also corroborated by Shulman et al. (1999),

who found that a teacher's command of a topic can help pupils succeed. In the teaching and learning process, the subject-matter expertise of the teachers is crucial.

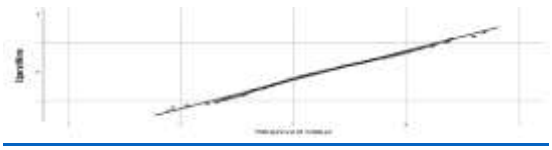
Methodology:

The road map of conducting a research study was an explanatory type with quantitative research which was designed to go through the study. The population consisted of 922 teachers from which the sample was selected with a random sampling method considering 10% of the overall population following the L.R.Gay, (2012), sampling technique, which consists of 93 Teachers from all the public secondary schools of Taluka Qasimabad Hyderabad. The Questionnaire was used to collect data from Teachers as an instrument of data collection.

Taluka	Teacher
Hyderabad city	3,601
Hyderabad Rural	1,654
Latifabad	2,543
Qasimabad	922
District Total	8,720

Data Analysis

Data was analyzed with the help of the Statistical Package for Social Sciences 26 version. Descriptive statistics were conducted to know the mean and standard deviation of the items used to know the respondent's opinion; inferential statistics was used to analyze the hypothesis of the study.



The data of the questionnaire was found to be normal as shown in the histogram and Q-Q Plot, hence the parametric test (Regression Analysis) was applied to test the hypothesis of the study.

Objective of the study

To examine the teachers` subject matter knowledge

Research Question

What is the teachers` subject matter Knowledge?

Item analysis:

Item-wise mean and SD of the Teachers` Questionnaire

Sr. No.	Item(s)	Mean	SD
1.	Teachers` grip on the Content of the study	2.7054	1.00125
2.	Teachers' expertise in different instructional domains	2.7232	.82974
3.	Teachers' skills in delivering knowledge	2.6696	.88418
4.	Teachers' control of the classroom environment	2.9911	.93477
5.	Teachers' conceptual strength to develop new ideas	2.5625	.90823
6.	Teachers' grip on classroom discipline	2.6607	1.05313
7.	Teachers' expertise in action research conducted during the teaching and learning process	2.3571	.94780
8.	Teachers' keen interest in I acquisition of knowledge of the subject	2.7946	.95047
9.	Teachers' expertise in involving students in different activities	2.9286	.94644
10.	Teachers' guidance regarding the usability of the acquired knowledge in practical life	2.6964	1.02086
11.	Teachers' awareness of reading, writing, and arithmetic principles to the domain	2.6696	.94334
12.	Teachers' attitude towards students` response	2.4464	.83654
13.	Teachers' application of knowledge in practical life	2.2679	1.03089
14.	Teachers' talent hunting expertise	2.3214	.95119
15.	Teachers' attitude towards development of the students` confidence	2.2946	1.03661
16.	Teachers attitude towards students` subject matter competence	2.3304	1.00797
17.	Teachers' expertise in covering content within stipulated time	2.5179	1.09858
18.	Teachers' expertise in assessment tools according to the nature of the content.	2.0893	.89597
19.	Teachers' expertise in diagnostic assessment	2.7054	.98309

The data presented in the above Table of Statements revealed that the item "Teachers` grip on Content of the study" and its' mean is 2.7054. The item "Teachers' expertise in different instructional domains" bears the calculated mean of 2.7232. The item "Teachers' skills of delivering knowledge" has a mean of 2.6696. The item "Teachers' control on classroom environment" with a calculated mean of 2.9911. "Teachers' conceptual strength to develop new ideas" has a mean value of 2.5625. "Teachers' grip on classroom discipline" has a mean value of 2.6607. The "Teachers' expertise in action research conducted during teaching and learning process" item in the table has a mean value of 2.3571. The item "Teachers'

keen interest in the acquisition of knowledge of the subject" has a mean of 2.7946. The item "Teachers' expertise in involving students in different activities" has a mean score of 2.9286. The "Teachers' guidance regarding the usability of the acquired knowledge in practical life" item in the table has its calculated mean score of 2.6964. "Teachers' awareness of reading, writing, and arithmetic principles to the domain" has a mean value of 2.6696. "Teachers' attitude towards students` response" has a mean value of 2.4464. "Teachers' application of knowledge in practical life" has a mean value of 2.2679. The mean of the item "Teachers' talent hunting expertise" is 2.3214. The mean of the item "Teachers attitude towards the development of the students` confidence" is 2.2946. "Teachers attitude towards students` subject matter competence" has a mean value of 2.3304. "Teachers' expertise in covering content within the stipulated time" has a mean value of 2.1579. 2.0893 is the mean value of the item "Teachers' expertise in assessment tools according to the nature of the content". "Teachers' expertise in diagnostic assessment" has a mean value of 2.7054. "Teachers' strong communication skills" has a mean value of 2.2371. The results of the overall mean of all nineteen items show that the teachers' subject matter knowledge is a main source to get better students` academic achievement.

Objective of the study

To know the influence of teachers` subject matter knowledge on students' academic achievement

Hypothesis of the study

There is no significant influence of teachers` subject matter knowledge on students' academic achievement.

Regression Analysis:

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.246	1	21.246	100.013	000[b]
	Residual	23.155	109	212		
	Total	44.401	110			

a. Dependent Variable: SAA

b. Predictors: (Constant), SMK

The above table of Model Summary shows that the beta square value the .479 represents 47% of the variance, whereas the P value .000>0.05 indicates that there is a significant influence of teachers` subject matter knowledge on students' academic achievement. It was revealed by the statistical means that the teacher's grip on subject matter knowledge can enhance students` academic achievement. Better subject matter knowledge will be the result of the students in academics. In this regard, the teachers intend to keep on improving their subject matter knowledge for the betterment of the teaching and learning process.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	692[a]	.479	.474	.46090

a. Predictors: (Constant), SMK

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.830	.247		3.366	.001
	SMK	.766	.077	.692	10.001	.000

a. Dependent Variable: SAA

Findings and Discussion

This study looked at each factor to see how much it affected instructors' subject-matter expertise, and the results showed that this expertise is a crucial component of teaching students the fundamental information they need. The only thing that can improve kids' academic performance is a source. The results of this study are consistent with Wilson and Weinberg's (1988) assertion that

instructors should be able to administer punishment straightforwardly and logically regardless of the context in which they are serving. It was also shown that teachers legally transfer and teach learning techniques that aid pupils in succeeding and developing a positive mindset by incorporating lesson preparation. The most important characteristic of a qualified teacher is often awareness of the subject matter of teaching, which has lately been taken into consideration. The results of this study are also corroborated by Shulman et al. (1999), who found that a teacher's command of a topic can help pupils succeed. In the teaching and learning process, the subject-matter expertise of the teachers is crucial. In District Hyderabad, Sindh, the researcher tried to gauge the subject matter expertise of the instructors as part of the study. The researcher picked a topic at secondary schools in Hyderabad, considering their command of the subject, after discovering that the subject matter knowledge of a single subject may be examined at a time. The conclusions of this study are also validated by Shakir & Lodhi (2016), who evaluated the subject-matter expertise of teachers in several regions of Punjab and discovered that the majority of them are "Emerging Teachers." Additionally, it was shown that the current state of educators' subject-matter expertise differs from the degree to which teachers' subject-matter expertise satisfies the requirements of Pakistan's "National Professional Standards for Teachers." This study found that instructors' subject-matter expertise needed improvement to successfully manage the teaching and learning process, a crucial component of teaching and learning. Jadama (2014) asserted that the topic of teacher awareness has a beneficial impact on school education and learning, which is in line with the findings of this study. His research showed that a teacher's topic knowledge goes beyond the scope of the curriculum they are required to teach. This form of comprehension adopts the logical structure and core of the topic itself, making it appropriate to demonstrate to students in these situations. The "National Professional Standards for Teachers in Pakistan" (NPSTP) were also disclosed as being crucial for instructors to meet contemporary educational expectations.

Conclusion

Based on the study's findings, it can be said that most instructors were aware of the national curriculum's subject-specific framework and foundational concepts and theories and that their knowledge of these ideas was to a satisfactory degree. The teacher's performance on the subject's developing nature was deemed adequate, and the teachers' comprehension of instructing the discipline was strong. A handful of instructors were successful in connecting the discipline with other courses and demonstrating how it may be used in daily life. Very few teachers struggled to do so. Because none of the professors could apply their knowledge to a scenario in real life, they were all deemed "Proficient" in the Disposition category. Additionally, it was discovered that the teacher has no sound control over the class's large number of kids. Despite this, educators attempt to boost students' self-esteem and subject-matter expertise through cross-questioning and emphasizing the matter of study. Nearly all instructors also had the opinion that pupils may study at a high level and succeed. Most of the instructors could all be categorized as "Developing teachers" in terms of their subject area expertise.

Recommendations:

- The heads of the schools should assign the subjects concerned to the teachers' area of expertise.
- Teachers` training should be highly emphasized especially in subject matter knowledge.

- It is suggested that all instructional resources, such as charts, lab supplies, and experimentation equipment, be set up in the classroom so that teachers and students can create and acquire information in a variety of methods.
- The heads of the schools should control and oversee how the curriculum and instruction are applied to ensure that the course can be completed without interruption and that all students are aware of the updated and revised curriculum that can be easily implemented by the National Professional Standards of Teachers in Pakistan (NPSTP).
- A group strategy is suggested. Self-reflection, teacher group meetings, research, and monitoring in schools, combined with a provision for yearly career progression, make up the four tiers of the paradigm.
- To increase teachers' topic expertise, policymakers should organize conferences, seminars, workshops, refresher courses, and electronic and print media.
- It is recommended that policymakers create an evaluation committee to examine teacher performance to encourage teachers to provide high-quality instruction at the school level.
- The school administrators should assess the instructors by the objectives for teaching outlined in the curriculum.
- Subject specialists, especially for science subjects should be recruited to encompass the lack of subject experts in the schools.
- The introduction of a performance evaluation system based on the National Professional Standards for Teachers in Pakistan (NPSTP) is strongly recommended to guarantee departmental-level comprehension and application of the standards.

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